

SEQUENCE LISTING

<110> Carl Johan Friddle
Turner, C. Alexander Jr.
Walke, D. Wade
Hilbun, Erin
Nepomnichy, Boris
Hu, Yi

<120> Novel Human Proteases and Polynucleotides Encoding the Same

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<140> US 09/938,330

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gcg ctc tgc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct 96
Ala Leu Cys Ala Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
20 25 30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt 144 Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe 35 40 45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct 192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
50 55 60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser

65 70 75 80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg 288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
85 90 95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt 336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
100 105 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta 384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
115 120 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc 432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
130 135 140

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ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg 576 Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg 180 185 190

ggc cag cag gag aag gac agc ggg agg aca cat gtg gtg tac cgc 624
Gly Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
195 200 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac 672
Arg Glu Ala Val Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
210 215 220

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Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
275
280
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aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata 912 Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile 290 295 300

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50 55 60 Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser 70 75 Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu 90 Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val 100 105 Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val 120 Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe 135 Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly 150 155 Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly 165 170 Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg 180 185 Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg 200 Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val 230 235 Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro 245 250 Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val 260 265 Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met 280 Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile 295 Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu 310 Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys 325 330 Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His 345 His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly 360 Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu 375 380 Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr 390 395 Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala 405 410 Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala 425 Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg 435 Tyr Leu Pro 450

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cgg gga Arg Gly 50	/ Arg	ttc Phe	ctc Leu	tcc Ser	cac His 55	gtg Val	gtg Val	tct Ser	ggc	cca Pro	Ala	gca Ala	gco Ala	tct Ser	192
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agt cac Ser His	ctc Leu	cgg Arg	gtg Val 85	gct Ala	cgc Arg	agc Ser	cct Pro	ctg Leu 90	cac His	cca Pro	gga Gly	Gly aaa	acc Thr 95	ctg Leu	288
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cgg cag Arg Gln 145	ccc Pro	tta Leu	cgg Arg	cag Gln 150	gag Glu	tgt Cys	gtg Val	tac Tyr	act Thr 155	gga Gly	ggt Gly	gtc Val	act Thr	gga Gly 160	480
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ctc atc Leu Ile	Arg	aca Thr 180	gac Asp	agc Ser	acc o	Asp :	ttc Phe 185	ttc Phe	att Ile	gag Glu	Pro	ctg Leu 190	gag Glu	cgg Arg	576
ggc cag	cag	gag (aag (gag	gcc a	agc (agg	agg	aca	cat	gtg	gtg	tac	cgc	624

Ox.	y Gli	n Glr 195		ı Lys	s Glu	ı Ala	200		/ Arg	g Thr	r His	Val 205		Туг	Arg	
cgg Arg	g gaq g Glu 210	ı Ala	gto Val	cag Glr	g cag i Gln	gag Glu 215	ı Trp	gca Ala	gaa Glu	ı cct ı Pro	gac Asp 220	Gly	gac Asp	ctg Leu	g cac His	672
	ı Glu										Leu				gtg Val 240	720
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BI

Le	u Il	e Ar	g Th	r As	p Se	r Th	r Asj	p Ph	e Ph	e Il	e Glı	u Pr	o Le	eu Gl	u Arg	
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		19	5				200	0				20	5		r Arg	
Ar	g Gl 21	u Al O	a Va	l Gl	n Gl:	n Glı 215		p Ala	a Gl	u Pro	220 220		y As	p Le	u His	
As 22	n Gl	u Al	a Ph	e Gl			y Asp	o Lei	u Pro			ı Le	u Gl	y Le	u Val	
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Ar	g Phe	e His		y Ly:	s Glı	ı His	Val 280		ı Asr	туг	Val	Le:		r Lei	ı Met	
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Gly	Lys	Leu 35	Ser	Asp	Tyr	Gly	Val 40	Thr	Val	Pro	Cys	Ser	Thr	Asp	Phe	
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tgg	cct	aac	agg	ata	aaa	cac	cac	tcc	ctc	tac	ttc	aat	ata	act		226
	-															
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tto Phe	e Gly	g aaq 7 Lys 115	s Glı	a cto ı Lev	g cad	c ttg s Lei	g cgo 1 Arg 120	g Lei	g cgg ı Arg	g cco	c aat o Asr	t cgg n Arg 125	g Ar	g tto g Le	g gta u Val	384	
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															cgc Arg	624	
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						gtg Val										816	
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aat Asn 305				Val					Val							960	
agc (Glu					Ser .								1008	

BI

His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly 360 tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc 1152 Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu 370 aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc 1200 Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr 385 390 395 ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca 1248 Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala 405 410 gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc 1296 Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala 420 425 ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc 1344 Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg 440 tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc 1392 Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala 450 455 acc tgc ccg ggc ggc cgc tcg agc cct ata gtg agt cgt att agg atg

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac

Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His 340 345 350

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1461

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 Cys

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 Ser
 Arg
 Thr
 Pro
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 Ser

 Gly
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 Asp
 Tyr
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 Val
 Thr
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 Pro
 Cys
 Ser
 Thr
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 Arg
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 Ala
 Ser

 Ala
 Gly
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 Met
 Val
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 Arg
 Pro
 Thr
 Leu
 Pro
 Arg
 Pro
 Arg
 Pro
 Arg
 Arg
 Pro
 Arg
 Pro

Thr Cys Pro Gly Gly Arg Ser Ser Pro Ile Val Ser Arg Ile Arg Met

Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg Arg Glu Ala Val Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala Thr Cys Pro Gly Gly Arg Ser Ser Pro Ile Val Ser Arg Ile Arg Met Ala Ala Thr Pro Phe Thr

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				gtg Val									336
				ctg Leu									384
				tca Ser									432
				cgg Arg									480
				gct Ala 165									528

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ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala

gat As <u>r</u>	gaç Glu	g ac	c ago r Sei 420	Lei	g ggd	ago Ser	gto Val	ato Met 425	: Ala	g cco	c cto D Lei	g gtg ı Val	g cag Glr 430	n Ala	gcc Ala	1296
			g Phe					Cys					Let		cgc Arg	1344
		Pro										Phe			gcc Ala	1392
	Pro										Tyr				gag Glu 480	1440
			ttt Phe													1488
			gag Glu 500													1536
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			ggc Gly													1632
			aca Thr													1680
			tgt Cys													1728
			aac Asn 580													1776
			ttc Phe													1824
			gac Asp													1872
			cag Gln	Asn												1920

gat Asp	gac Asp	gcc Ala	ca Gli	g aa n Ly 64	s Cy	rt ga rs Gl	g ct u Le	g at u Il	c to e Cy 65	s Gl	ag to In Se	cg go er A	cg g la A	sp X	cr gg aa G1 55	g 1968 Y
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tac Tyr	cgg Arg	gac Asp 675	cca Pro	a tad	c ag	c gto r Val	tg: L Cy:	s Ala	g cg a Ar	t gg g Gl	c ga y Gl	ig to u Cy 68	rs Va	ig co	ct gto co Val	2064 1
GIY	tgt Cys 690	gac Asp	aag Lys	gag Glu	g gte Val	g ggg 1 Gly 695	z Ser	c ato	g aa Ly:	g gc s Al	g ga a As 70	p As	c aa p Ly	ıg tç s C <u>y</u>	gt gga 's Gl _l	a 2112
gtc Val (705	tgc Cys	GJA aaa	ggt Gly	gac Asp	aac Asr 710	ı Ser	cac His	tgc Cys	ago Aro	g act g Thi 715	r Va	g aa l Ly	g gg s Gl	g ac y Th	g ctg r Leu 720	l
Gly I	aag Lys	gcc Ala	tcc Ser	aag Lys 725	cag Glr	gca Ala	gga Gly	gct Ala	cto Leu 730	ı Lys	g cto	g gte	g ca l Gl:	g at n Il 73	c cca e Pro 5	2208
gca g Ala G	ggt g Sly <i>l</i>	Ala .	agg Arg 740	cac His	atc	cag Gln	att Ile	gag Glu 745	gca Ala	ctg Leu	gag Glu	g aaq ı Lys	g tco Sei 750	r Pr	c cac o His	2256
cgs w Xaa X	.aa \	gtg (/al '	gtg Val	aag Lys	aac Asn	cag Gln	gtc Val 760	acc Thr	ggc Gly	agc Ser	ttc Phe	ato 11e 765	e Lei	aa Ası	c ccc n Pro	2304
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BI

gga Gly 865	Gl3	g ato	c caç e Glr	g tto n Phe	e acc Thr 870	Lys	tao Tyr	ggc Gly	tgo Cys	c cgg s Arg 875	g Arg	e aga g Arg	a cga g Arg	a gad g Asp	c cac His 880	2640
cac His	atg Met	g gtg : Val	g cag l Glr	g cga n Arg 885	y His	ctg Leu	tgt Cys	gac Asp	cac His 890	Lys	aag Lys	g agg S Arg	g cco	c aag Lys 895	ccc Pro	2688
atc Ile	cgc Arg	cgg Arg	g cgc g Arg 900	Cys	aac Asn	cag Gln	cac	ccg Pro	Cys	tct Ser	cag Gln	cct Pro	gtg Val 910	Trp	gtg Val	2736
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					aaa Lys 950											2880
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cac His 1025	Gln	aac Asn	tcc Ser	acg Thr	gtg Val 1030	Arg	gcc Ala	gat Asp	gtc Val	tgg Trp 1035	Glu	ctt Leu	ggg ggg	acg Thr	cca Pro 1040	3120
gag Glu					Pro			Xaa		Leu					Lys	3168
ata Ile				Cys			Glu		Cys					Ser		3216

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ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac

Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr

cac His	cgg Arg 109	Leu	tgc Cys	tgt Cys	gtg Val	tcc Ser 109	Cys	atc	aag Lys	aag Lys	gcc Ala 110	Ser	ggc	ccc Pro	aac Asn	3312
cct Pro 110	Gly	cca Pro	gac Asp	cct Pro	ggc Gly 111	Pro	acc Thr	tca Ser	ctg Leu	ccc Pro 111	Pro	ttc Phe	tcc Ser	act Thr	cct Pro 1120	3360
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cag Gln	ctc Leu	cca Pro 115	gga Gly 5	gct Ala	ctg Leu	gat Asp	aca Thr 1160	Ser	tcc Ser	cca Pro	GJA aaa	acc Thr 1165	Gln	cat His	ccc Pro	3504
ttt Phe	gcc Ala 1170	Pro	gag Glu	aca Thr	cca Pro	atc Ile 1175	Pro	gga Gly	gca Ala	tcc Ser	tgg Trp 1180	Ser	atc Ile	tcc Ser	cct Pro	3552
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gtc Val	cct Pro	gag Glu	gac Asp	aaa Lys 1205	Gly aaa	caa Gln	cct Pro	Gly	gaa Glu 1210	Asp	ctg Leu	aga Arg	Pro	gcc Ala 1215	Arg	3648
gcg Ala		Ala				tag *					•					3669

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Bl

Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys 550 Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Val Arg Ser Arg Ser 565 570 Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu 580 585 Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly 600 Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr 615 620 Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp 630 635 Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly 650 Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser 660 665 Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val 680 685 Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly 695 Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu 710 715 Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro 725 730 Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His 745 Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro 760 Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu 775 780 Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly 790 795 Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly 805 810 Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu 825 Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly 855 Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His 875 His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro 885 890 Ile Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val 905 Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val 920 Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His 935 940 Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg 955 Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala 965 970 Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln 980

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Va	1 V	al	Cys 995	Ar	g Th	ır A	sn A	la	Asr	ı Se	r L	eu	Gly	Hi			lu G	ly	Asp	
ΔΥ	a P	ro	_		~ W=		۱ ۲:	· ~ 3	100		т		_			05	_	_		
	1	01	0				1	015	5					102	20		ly G			
Hi	s G	ln	Asn	Se	r Th	r Va	al A	rg	Ala	ı As	рV	al	Trp	Gli	ı Le	u G	ly Ti	hr	Pro	
10	25					10	030						103	5					1040	
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Il	e S	er	Ser	Ме 10	t Су 60	s Al	a A	la	Glu	Pr 10	o C;	ys	Thr	Gly	/ As		rg Se	er	Val	
Ph	e Cy	/S	Gln 107	Me		u Va	1 L			Ar		yr	Cys	Ser		e Pr	70 70 G]	Lу	Tyr	
Hi	s Ai	g	Leu		s Cy	s Va		er			e Ly	ys	Lys	Ala	10 Se		y Pr	· O	Asn	
D		90		_				095						110						
TT()5					11	10						1115	5			r Th		1120	
Gly	⁄ S∈	er	Pro	Let	ı Pro	o Gl	у Р	0	Gln	Asp	Pı	0	Ala	Asp	Ala	a Al	a Gl	u :	Pro	
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Pro) G1	У	Lys	Pro	Th	c Gl	y Se	er	Glu	Asp	ін с	s	Gln	His	Gly	/ Ar	g Al	a 7	Thr	
				114	10					114	15					11	50			
Glr	ı Le	u	Pro	Gly	/ Ala	a Le	u As	sp '	Thr	Ser	: Se	er	Pro	Gly	Thi	Gl	n Hi	s I	Pro	
Dl			1155			_	_		1160						116					
	11	70					11	75						118	0		e Se			
Thr	Th	r	Pro	Gly	· Gly	, Leι	ı Pr	0 7	Trp	Gly	Tr	p	Thr	Gln	Thr	Pr	o Th	r E	Pro	
118	5					119	90						1195	,				1	200	
Val	Pr	0 (Glu	Asp	Lys	Gly	/ Gl	n I	Pro	Gly	Gl	u.	Asp	Leu	Arg	Pro	o Al	a A	arg	
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Met	Ala	P	ro I	Leu	Arg	Ala	Let	ı L	eu s	Ser	Туг	- L	eu I	Leu	Pro	Leu	His	י ריז	ys vs	40
1					5						10						15		, 0	
gcg	ctc	t.	ac 1	ccc	acc	מכמ	aaa	. a	ac (700	200		a		a + ~					۰.
Ala	Leu	C	vs >	(aa	Ala	Ala	Glv	, a	er I	-yy	Thr	. C	ro c	,ay	ctg	cac	CTC	to	C C	96
		_	,	20		1114	Q L y	5.	CI F	25	1111	F	10 6	, Lu	ьeu	30	Leu	Se	er	
										23						30				
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cgg	gga	C	gc t	tc	ctc	tcc	cac	gt	g g	rtg	tct	g	gc_c	ca	gca	gca	gcc	to	:t	192
Arg	Gly	A	rg P	he	Leu	Ser	His	Vā	al V	'al	Ser	G	ly P	ro i	Ala	Āla	Āla	Se	r	- •

50 55 60

gc Al 6	a Gl	g ag y Se	c at r Me	g gt. t Vai	a gte 1 Va: 70	l Ası	c ac	g cca r Pro	a cco	c ac o Th	r Le	a cca ı Pro	a cg.	a cad g His	c tcc s Ser 80	240
ag Se	t cad	c ct s Le	c cg u Ar	g gtg g Val	l Ala	c cgo a Arg	c ago	c cct	cto Lei 90	ı Hi	c cca s Pro	a gga o Gly	a ggg	g aco y Thi	ctg Leu	288
tg: Tr]	g cct o Pro	ggo Gl	c agg y Arg 100	y Val	r erz a aad	g cgo / Arc	cac g His	tco Ser 105	Lei	tao 1 Tyl	tto Phe	aat Asn	gto Val 110	l Thr	gtt Val	336
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275 280 285

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ago Sei	c ctg	g at u Il	c ga e Gl	g cg u Ar 32	g Gl	g aad y Asr	c cco	c tca Ser	a cgo Aro	g Sei	c cto	g gag ı Glu	g cag ı Glı	g gt n Va: 33!	g tgt l Cys 5	1008
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500 505 510

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725 730 735

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cg Xa	s wy a Xa	w gt a Va 75	l Va	g aag 1 Ly:	g aad s Asi	c cag n Glr	g gtd n Val 760	l Thr	ggo Gly	c ago / Ser	c tto	2 ato 2 Ile 765	e Lei	c aad 1 Asi	c ccc n Pro	2304
aa Ly	g gg s Gl <u>y</u> 770	y Ly:	g gaa	a gco u Ala	c aca	a ago Ser 775	Arg	g acc g Thr	tto Phe	c acc	gcc Ala 780	a Met	ggc Gly	cto Lev	g gag ı Glu	2352
tg: Tr; 78!	o Glu	g gat 1 Asp	geg Ala	g gtg a Val	g gag Glu 790	ı Asp	gco Ala	aag Lys	gaa Glu	ago Ser 795	Leu	aag Lys	acc Thr	ago Ser	800 gly	2400
Pro	c ct <u>c</u> D Leu	g cct ı Pro	gaa Glu	a gcc ı Ala 805	Ile	gcc Ala	atc Ile	ctg Leu	gct Ala 810	Leu	ccc Pro	cca Pro	act Thr	gag Glu 815	ggt Gly	2448
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Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro Ile Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys

Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His

Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro

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Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro

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135

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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys

1 5 10 15

Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe 40 Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu 90 Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val 105 Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val 120 Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe 135 140 Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly 150 Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly 165 170 Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg 185 Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg 200 205 Arg Glu Ala Val Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His 215 220 Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val 230 235 Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro 245 250 Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val 260 265 Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met 280 Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile 295 Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu 310 315 Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys 330 Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His 340 345 His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly 360 Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu 375 Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr 390 395 Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala 410 Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala 420 425

445

460

Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg 440

Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala

Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Asp His His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro Ile Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val

Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val 920 Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His 935 940 Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg 950 955 Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala 965 970 Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln 985 Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp 1000 Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn 1015 1020 His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro 1030 1035 Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys 1045 1050 Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val 1060 1065 Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr 1080 1085 His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn 1090 1095 Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro 1110 1115 Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro 1125 1130 Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr 1140 1145 Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro 1160 1165 Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro 1175 Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro 1190 1195 Val Pro Asp Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr 1210 <210> 13 <211> 3642 <212> DNA <213> homo sapiens <220> <221> CDS <222> (1)...(3642) atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys 5

36

96

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct

Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser

g:	ga a ly L	ag c ys L	tc a eu : 35	agt Ser	gac Asp	tat Tyr	ggt Gly	gte Val	1 Tł	ca ç ır V	gtg /al	ccc Pro	tgc Cys	age Ser 45	r Th	ca g ir A	ac .sp	ttt Phe	144
C Q An	. 9 0.	ga c ly A 50	gc t rg H	tc (Phe 1	ctc Leu	tcc Ser	cac His 55	gto Val	g gt l Va	g t	ct	ggc Gly	cca Pro 60	gca Ala	a go a Al	a g a A	cc la	tct Ser	192
L T	a gg a G] 5	jg a .y S	gc a er M	itg g Iet V	gta g Val '	gtg Val 70	gac Asp	acg Thr	cc Pr	a c o P	cc	aca Thr 75	cta Leu	cca Pro	cg Ar	a ca g Hi	ac is	tcc Ser 80	240
ag Se	t ca r Hi	.C Ct s Le	cc c eu A	rg v	tg g al <i>1</i> 85	gct Ala .	cgc Arg	agc Ser	cc Pr	o L	tg eu 90	cac His	cca Pro	gga Gly	gg	y Tł	ec nr 95	ctg Leu	288
11)	g cc p Pr	O GI	10	20 V	aı (ITÀ 1	Arg	His	Ser 105	c Le	∍u ′	Tyr	Phe	Asn	Va]	L Th	ır '	Val	336
1110	e Gl	у Lу 11	5 5	LU L	eu n	ıs I	eu .	Arg 120	Leu	ı Ar	g I	Pro .	Asn	Arg 125	Arg	Le	u V	Val	384
val	Pro 130)	у Бе	:L 26	er v	al G	1u '	rp	Gln	Gl	u A	sp 1	Phe.	Arg	Glu	Lei	u E	Phe	432
145		l PI(ı re	u Ar	g G. 15	in G	lu (Cys	Val	Ту	r T 1	hr (Sly (Gly	Val	Thi	c G 1	1y 60	480
nec	cct Pro	GTA	AL	a AI 16	a Va 5	ıl Al	la I	lle	Ser	Asr 17(n C;	ys A	sp C	Sly :	Leu	Ala 175	ı G	ly	528
neu	atc Ile	Arg	180	AS ₁	p Se	r Th	ır A	.sp 1	Phe 185	Phe	e II	le G	lu F	ro I	Leu 190	Glu	. A:	rg	576
ggc Gly	GIII	195	GIU	г гуз	s GT	u Al	a S	er 0	3ly	Arg	Th	r H	is V 2	al V 05	/al	Tyr	Aı	£g	624
	210	Ala	vai	Glr	1 Gli	1 G1 21	u Tı 5	rp A	la	Glu	Pr	O As 22	sp G: 20	ly A	sp :	Leu	Hi	. S	672
aat Asn 225	o Lu	Ala	rne	GIÀ	230	ı GI	y As	sp L	eu 1	Pro	As:	n L∈ 5	eu Le	eu G	ly 1	Leu	Va 24	0	720
Gly a	gac Asp	cag Gln	ctg Leu	ggc Gly	gac Asp	aca Thi	a ga Gl	u A	gg a rg I	aag Lys	cg Ar	g cg g Ar	g ca g Hi	at go	cc a la I	aag ys	cc Pr	a o	768

g: G:	gc a ly S	gc t er 1	yr s	agc Ser 260	atc Ile	gag Glu	g gt 1 Va	g ct l Le	eu L	ctg Leu 265	gt. Va	g gt 1 Va	ig g	ac .sp	gac Asp	tc Se 27	r V	tg al	gtt Val	816
Cg Ar	gc t :g P	пе н	at g is C 75	lgc	aag Lys	gag Glu	r cat	t gt s V <i>a</i> 28	il G	ag In	aad Asr	c ta n Ty	it g r V	al	ctc Leu 285	ac Th	c c	tc eu	atg Met	864
aa As	it at in II 29	le v	ta g al A	at d	gag Glu	att Ile	tac Tyr 295	Hi	c g s A	at sp	gaç Glu	g to 1 Se	r Le	tg g eu (gly aaa	gt:	t ca	is	ata Ile	912
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cg: Ar	tg g Tr	g gc p Al	a ca a H: 34	s S	cc (er (cag Gln	cag Gln	cg(Ar	c ca g Gl 34	n.	gac Asp	Pro	c ag o Se	r H	is	gct Ala 350	ga Gl	g u :	cac His	1056
нт	ga S Asj	э ні 35	s Va 5	ı V	al I	Phe	Leu	Thr	: Ar	g (Gln	Asp) Ph	e G.	1y 65	Pro	Se	r (Gly	1104
tat Tyr	370	Pr	c gt o Va	c ad l Th	ct g nr G	ly	atg Met 375	tgt Cys	ca Hi	c c	ccc Pro	ctg Leu	agg Arg 380	g Se	gc :	tgt Cys	gco	e c	ctc Leu	1152
aac Asn 385	cat His	gag Gli	g ga ı As	t gg p Gl	.у Р	tc he 90	tcc Ser	tca Ser	gc Ala	c t a F	he	gtg Val 395	ata Ile	a go	ct d la F	cat His	gag Glu	ιΊ	hr 00	1200
Gly	cac His	gtg Va]	g cto . Le	gg u Gl 40	у М	tg (et (gag Glu	cat His	gad As <u>ı</u>	o G	gt ly 10	cag Gln	Gly	g aa ⁄ As	it g	gc 1y	tgt Cys 415	g	ca la	1248
ASP	gag Glu	Thr	420	: Le	u G	ly s	Ser '	Val	Met 425	: A	la 1	Pro	Leu	. Va	1 G 4	1n 30	Ala	A	la	1296
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tac Tyr	ctc Leu 450	ccc Pro	tcc Ser	tac Ty:	c ga c As	p C	gc o ys I 55	etc Jeu	ctc Leu	ga As	at g	Jac Asp	ccc Pro 460	tt: Phe	t ga	at o	cct Pro	g(A]	cc La	1392
tgg Trp	ccc Pro	cag Gln	ccc Pro	cca Pro	a ga o Gl	g c u L	tg c eu F	ct	ggg Gly	at Il	c a	ac sn	tac Tyr	tca Ser	a at	ig g	gat Asp	ga G1	ıg .u	1440

465	470	475	480
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ccg gag cag aca Pro Glu Gln Thr 545	tat ggc cag ga Tyr Gly Gln As: 550	t gga ggc tgg agc tcc t p Gly Gly Trp Ser Ser 1 555	gg acc aag 1680 Trp Thr Lys 560
The Gry Ser Cys	tcg cgg tca tg Ser Arg Ser Cys 565	t ggg ggc ggg gtg cga t s Gly Gly Gly Val Arg S 570	cc cgc agc 1728 er Arg Ser 575
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acc tac gag gac t Thr Tyr Glu Asp F 610	etc cgg gcc cag Phe Arg Ala Gln 615	cag tgt gcc aag cgc aa Gln Cys Ala Lys Arg As 620	ac tos tac 1872 sn Xaa Tyr
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690 695 700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg 2160 Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu 710 ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca 2208 Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro 730 gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His 740 745 cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro 755 760 aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag 2352 Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu 770 tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg 2400 Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly 785 790 795 ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt 2448 Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg 2496 Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc 2544 Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr 840 tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga 2592 Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly 850 855 gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac 2640 Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His 865 870 cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc 2688 His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro 885 atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg 2736 Ile Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val 900 905 acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg 2784 Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val

cag aca cgg ggg ata ca Gln Thr Arg Gly Ile Gl 930	g tgc ctg ctg n Cys Leu Leu 935	ccc ctc tcc aat gga Pro Leu Ser Asn Gly 940	acc cac 2832 Thr His
aag gtc atg ccg gcc aaa Lys Val Met Pro Ala Lys 945 950	Ala Cys Ala	ggg gac cgg cct gag Gly Asp Arg Pro Glu 955	gcc cga 2880 Ala Arg 960
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agg cca gac act gtc cag Arg Pro Asp Thr Val Gln 1010	gtc tgc arc Val Cys Xaa 1015	ctg ccc gcc tgt gga (Leu Pro Ala Cys Gly (1020	gga aat 3072 Gly Asn
cac cag aac tcc acg gtg His Gln Asn Ser Thr Val 1025 103	Arg Ala Asp	gtc tgg gaa ctt ggg a Val Trp Glu Leu Gly 1 1035	acg cca 3120 Thr Pro 1040
gag ggg cag tgg gtg cca Glu Gly Gln Trp Val Pro 1045	Gln Ser Xaa	Pro Leu His Pro Ile A	aac aag 3168 Asn Lys 1055
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gac cct ggc cca acc tca Asp Pro Gly Pro Thr Ser 1105 1110	ctg ccc ccc t Leu Pro Pro P	tc tcc act cct gga a he Ser Thr Pro Gly S 1115	gc ccc 3360 er Pro 1120
tta cca gga ccc cag gac Leu Pro Gly Pro Gln Asp 1125	Pro Ala Asp A	la Ala Glu Pro Pro G	ga aag 3408 ly Lys 135
cca acg gga tca gag gac Pro Thr Gly Ser Glu Asp 1	cat cag cat g His Gln His G	gc cga gcc aca cag c ly Arg Ala Thr Gln Le	tc cca 3456 eu Pro

gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
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gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
1170

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Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Asp
1185

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1210

150

3504

3600

3642

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<211> 1213

<212> PRT

<213> homo sapiens

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BI

Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro 245 250 Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val 265 Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met 280 Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile 295 Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu 310 315 Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys 325 330 Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His 345 His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly 360 Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu 375 Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr 390 395 Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala 405 410 Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala 425 Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg 440 445 Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala 455 Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu 470 475 Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe 485 490 Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn 500 Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu 520 525 Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser 535 540 Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys 550 555 Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser 570 Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu 585 Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly 600 Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr 620 Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp 630 635 Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly 650 Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser 665 Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val 675 680

BI

Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro Ile Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg . 955 Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys

Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro 1140 1145 Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro 1155 1160 Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro 1175 Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Asp 1190 1195 Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr 1205 <210> 15 <211> 3708 <212> DNA <213> homo sapiens <220> <221> CDS <222> (1)...(3708) <400> 15 atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys 5 10 gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct 96 Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gcc tct 192 Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser 55 gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc 240 Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser 65 -70 75 agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu 85 tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt 336 Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val 100 ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta

Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val 120

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130 135 140

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at Me	g cc t Pr	t g	là Y aa a	ca la	gct Ala 165	\ Val	gc. L Ala	c at a Il	c ag e Se	c aa r As 17	n C7	gt ga 7s As	ac gg sp Gl	a tt y Le	g gc u Al 17	g ggc a Gly 5	528
ct Le	c at u Il	c co	g T	ca hr 80	gac Asp	ago Ser	aco Thi	c ga	c tt p Ph 18	e Ph	c at e Il	t ga e Gl	ıg cc .u Pr	t ct o Le 19	u Gl	g cgg u Arg	576
gg Gl	c ca / Gl:	g ca n Gl 19	n G	ag lu	aag Lys	gag	gco Ala	ago Sei 200	c Gl	g ag	g ac g Th	a ca r Hi	t gte s Va. 20:	l Va	g ta l Ty:	c cgc r Arg	624
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G1	с са у Ні	c gt s Va	g ct l Le	c gg eu Gl 40	у Ме	g ga t Gl	g ca u Hi	at is	gac Asp	ggt Gly 410	y Gl	ıg (gly	aat Asn	gg Gl	c tg y Cy 41	s	gca Ala	1248
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580 585 590

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805 810 815

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1095

1175

1110

1125

1140

1190

1155

1205

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Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr

Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro

Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro

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1160

1210

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BI

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cg(g gag g Glu 210	ı Ala	c gto a Val	c caç l Glr	g cag n Glr	gag Glu 215	ı Trp	g gca Ala	ı gaa	a cct ı Pro	gac Asp 220	Gly	gad Asp	c ctg Leu	cac His	672
	ı Glu					Gly					Leu				gtg Val 240	720
					Asp					Arg					cca Pro	768
				Ile			ctg Leu									816
			Gly				gtg Val 280									864
							cac His									912
							atc Ile									960
							ccc Pro									1008
							cgc Arg									1056
							acc Thr 360									1104
							tgt Cys									1152
							tca Ser							Glu		1200
							cat His	Asp								1248
		Thr					gtc Val					Val				1296

			Phe												cgc Arg	1344
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						-							_	_	gag Glu 480	1440
_		_		_			_			_		tgc Cys	_	_		1488
					_	_	_	_		_	_	cat His		-		1536
						_	_					gat Asp 525				1584
				_		_					_	atc Ile		_	•	1632
_		_				_	_				-	tcc Ser			-	1680
			_	_			_				_	cga Arg		_	_	1728
	_	_						_				cgc Arg		_		1776
												gag Glu 605				1824
acc Thr			_			-	_	_	_	_	_	_				1872
tat Tyr 625			_		-	_		_							_	1920
gat Asp			Gln	_			_									1968

	_	_	_	_		_		_		_			_	Cys	agc Ser	2016
		_	cca Pro		_	_	_		_			_			_	2064
			_		-			_	_		-	_	_	_	gga Gly	2112
			ggt Gly					_						_	_	2160
	_		tcc Ser	_	-	-		_		_	_		_			2208
		_	agg Arg 740			_		_	-	_	-	_				2256
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		_	agc Ser 820	_	_	_		_		_				_	_	2496
-			atc Ile		_					_		_	_	_		2544
	-		gcg Ala		_	-		_		_	_	_	_	_		2592
			cag Gln						_		_	-	_	_		2640

					His					Lys					ccc	2688
	cgc Arg								Cys					Trp	gtg Val	2736
	gag Glu															2784
	aca Thr 930															2832
	gtc Val															2880
	ccc Pro															2928
	tcc Ser						_					_	_		_	2976
_	gtg Val		Arg					Ser					Glu		-	3024
	cca Pro 1010	Asp					Cys					Cys				3072
	cag Gln					Arg					Glu					3120
	Gly ggg		_		Pro			_		Leu					Lys	3168
	tca Ser			Glu		-			Asp			-		Cys	-	3216
	gaa Glu		Leu			Tyr		Ser			-		His			3264
	tgt Cys 1090	Val			Ile					Gly		Asn				3312

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			ccc Pro	_	Asp		_	_	_	Ala	-				Lys	3408
	-		tca Ser 1140	Glu	-		_		Gly	_	~		_	Leu		3456
	-	_	gat Asp		_			Gly		_			Phe	_		3504
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			caa Gln		Gly	_	_	_	_	His				_	Leu	3648
	_	_	ctg Leu 1220	Pro			Pro		Glu			-		Ser	-	3696
tag																3699

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<212> PRT

<213> homo sapiens

<400> 18

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Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg Arg Glu Ala Val Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser

Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Val Arg Ser Arg Ser Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro Ile Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg

BI

Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala

Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln

Val	Val	. Cys 995		Thr	Asn	Ala	Asn		Leu	Gly	His	Cys		Gly	Asp	
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His 102		Asn	Ser	Thr	Val 103		Ala	Asp	Val	Trp 103		Leu	Gly	Thr	Pro 1040	
Glu	Gly	Gln	Trp	Val 104		Gln	Ser	Gly	Pro 105		His	Pro	Ile	Asn		
Ile	Ser	Ser	Thr		Pro	Cys	Thr	Gly 106	Asp		Ser	Val	Phe	Cys	Gln	
Met	Glu	Val 107		Asp	Arg	Tyr	Cys	Ser	_	Pro	Gly	Tyr 108	His	_	Leu	
Cys	Cys 109	Val		Cys	Ile	Lys 109	Lys		Ser	Gly	Pro	Asn		Gly	Pro	
Asp	Pro	Gly	Pro	Thr	Ser	Leu		Pro	Phe	Ser 111	Thr		Gly	Ser	Pro 1120	
		Gly	Pro	Gln 112	Asp		Ala	Asp	Ala 113	Ala		Pro	Pro	Gly 113	Lys	
Pro	Thr	Gly	Ser 1140	Glu		His	Gln	His	Gly		Ala	Thr	Gln 115	Leu		
Gly	Ala	Leu 1155	Asp		Ser	Ser	Pro 1160	Gly		Gln	His	Pro	Phe		Pro	
Glu	Thr 117	Pro		Pro	Gly	Ala 1175	Ser		Ser	Ile	Ser 1180	Pro		Thr	Pro	
Gly 118	Gly	Leu	Pro	Trp	Gly 1190	Trp		Gln	Thr	Pro 1199	Thr		Val	Pro	Glu 1200	
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Ala	Leu	Cys	Xaa 20	Ala	Ala	Gly	Ser	Arg 25	Thr	Pro	Glu	Leu	His 30	Leu	Ser	
gga	aag	ctc	agt	gac	tat	ggt	gtg	aca	gtg	ccc	tgc	agc	aca	gac	ttt	144
Gly	Lys	Leu 35	Ser .	Asp	Tyr	Gly	Val 40	Thr	Val	Pro	Cys	Ser 45	Thr	Asp	Phe	
cgg	gga	cgc	ttc	ctc	tcc	cac	gtg	gtg	tct	ggc	cca	gca	gca	gcc	tct	192

Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser

50 55 60

Gly				Asp				Leu			tcc Ser 80	240
			Ala				His				ctg Leu	288
		Val			cac His	Ŀeu				Thr	gtt Val	336
	Glu				cgc Arg 120						gta Val	384
					tgg Trp							432
					tgt Cys							480
					atc Ile							528
					gac Asp							576
					agc Ser 200	 					_	624
					tgg Trp							672
					gac Asp					 _		720
					gag Glu							768
					ctg Leu				Asp			816
					gtg Val							864

275 280 285

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680

675

685

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg Ile Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val cag aca cgg ggg ata cag tgc ctg ctc ctc tcc aat gga acc cac Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His

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Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg

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1170 1175 1180

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Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Val Arg Ser Arg Ser Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser

Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro Ile Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val 1065 1070 Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn

Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro

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G1	n Le	u Pr	o G1	-	a Lei	ı Ası	o Thi	r Se		r Pro	o Gl	y Th:			s Pro	
Ph	e Ala 11	a Pr		u Th	r Pro	116 117	e Pro		y Ala	a Sei	r Try	o Se		e Se	r Pro	
Th:	r Th:	r Pro	o Gly	y Gly	/ Let		Trp	o Gly	y Tr	o Thi	Gli		r Pro	o Th:	r Pro 1200	
Va:	l Pro	o Gli	ı Ası	Lys 120		/ Glr	n Pro	o Gly	y Glu 121	ı Ası		ı Arç	g Hi:	s Pro	Gly	
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Trp	Pro	o Gly	7 Arg		. Gly	/ Arg	, His	Ser 105		ı Tyr	. Ph€	e Asr	1 Val		Val	
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		Gly					Trp					Arg			ttc Phe	432
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Gly aaa																768
ggc Gly																816
cgc Arg																864
aat a Asn i					Ile					Ser						912
aat a Asn 3				Val					Val							960
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Se	r Le	u Il	e Gl	u Ar		y Ası	n Pro	o Se:	r Ar 33		r Le	u Gl	u Gl	n Va 33	l Cys 5	
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cat His	c gad s Asj	с са р Ні 35	s Va	t gto	g tto L Phe	c cto e Leu	aco Thr 360	Arç	g cag g Gli	g ga n Asj	c tt p Ph	t ggg e Gl ₃ 365	/ Pro	tc Se:	a ggg r Gly	1104
tat Tyr	gca Ala 370	a Pro	c gto o Val	c act l Thr	ggc Gly	atg Met 375	Суз	cac His	cco Pro	c cto	g agg 1 Arg 380	g Ser	tgt Cys	gco Ala	c ctc a Leu	1152
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tgt (Cys)	gca Ala 530	ccc Pro	ggc Gly	aag Lys	Trp	tgc Cys 535	ttc . Phe :	aaa (Lys (ggt Gly	cac His	tgc Cys 540	atc Ile	tgg Trp	aag Lys	tcg Ser	1632
ccg (gag	cag	aca	tat :	ggc (cag q	gat q	gga g	ggc	tgg	agc	tcc	tgg a	acc	aag	1680

Pro 545		u Gli	n Thi	с Туг	Gly 550		n Asp	Gly	gly	7 Trg 555		r Sei	Trp	Thi	Lys 560	
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			Phe										Cys		ggg Gly	1824
		Glu										Arg			tac Tyr	1872
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				atg Met												2016
				tac Tyr												2064
				gag Glu												2112
gtc Val 705				gac Asp												2160
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gca Ala							Ile									2256
cgs (Xaa)	Xaa	gtg Val 755	gtg Val	aag Lys	aac Asn	Gln	gtc . Val ' 760	acc Thr	ggc Gly	agc Ser	ttc Phe	atc Ile 765	ctc Leu	aac Asn	ccc Pro	2304
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Lys	5 Gl <u>s</u> 770	y Ly O	s Gl	u Al	a Th	r Se:		g Th	r Ph	e Th	r Al 78		t Gl	y Le	u Glu	
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ccc Pro	cto Leu	g cc ı Pr	t gad o Gli	a gc u Ala 80!	a Ile	t gcd e Ala	ato a Ile	c ctg e Leu	g gc 1 Ala 810	a Lei	c cc	c cc	a ac	t ga r Gl 81	g ggt u Gly 5	2448
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ctg Leu	ccc Pro	Let 835	ı Ile	e Gl7	g ago / Ser	aac Asn	aat Asn 840	Val	cto Leu	ctg Leu	g gag ı Glu	g gag ı Glu 845	ı Met	g gad : Asp	acc Thr	2544
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Val Val Cys Arg 995	g Thr Asn Ala	Asn Ser Le	eu Gly His Cys Gl 1005	u Gly Asp
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gga gct ctg gat Gly Ala Leu Asp 1155	Thr Ser Ser	cca ggg acc Pro Gly Thr 1160	cag cat ccc ttt Gln His Pro Phe 1165	gcc cct 3504 Ala Pro
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235

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Glu	Cys	: Asp	Glr	ı Asr	TVI	- I1e			ı Thi	- Agr	G1r			. So:	r Met
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Ara	Ι.Δ11	V=1	T = 7			7 ~~ ~	C	. 7	137				_	137	
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Va l	Gln	_		uic	17-1	C111		-	T1 -	01	m1	1485		~ 3	
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